
Proton Plan Status March Report

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Jeff Sims

Agenda

- Operations Report - E. Prebys
- Technical Progress - E. Prebys
- Project Status and Cost Report - J. Sims

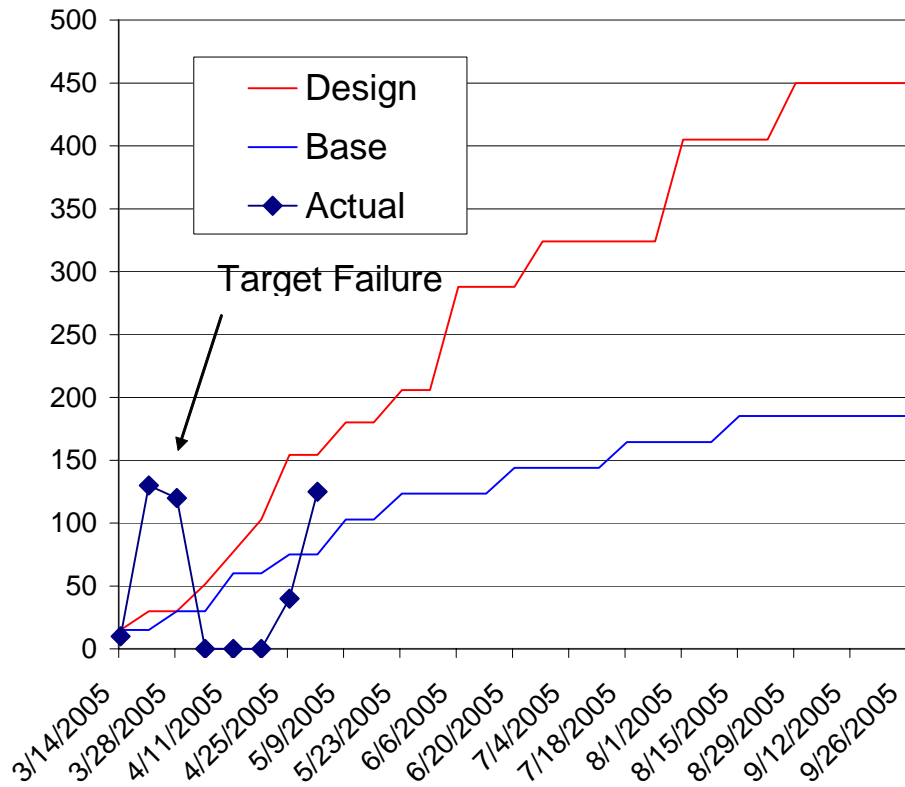
Operations Report

Proton Delivery

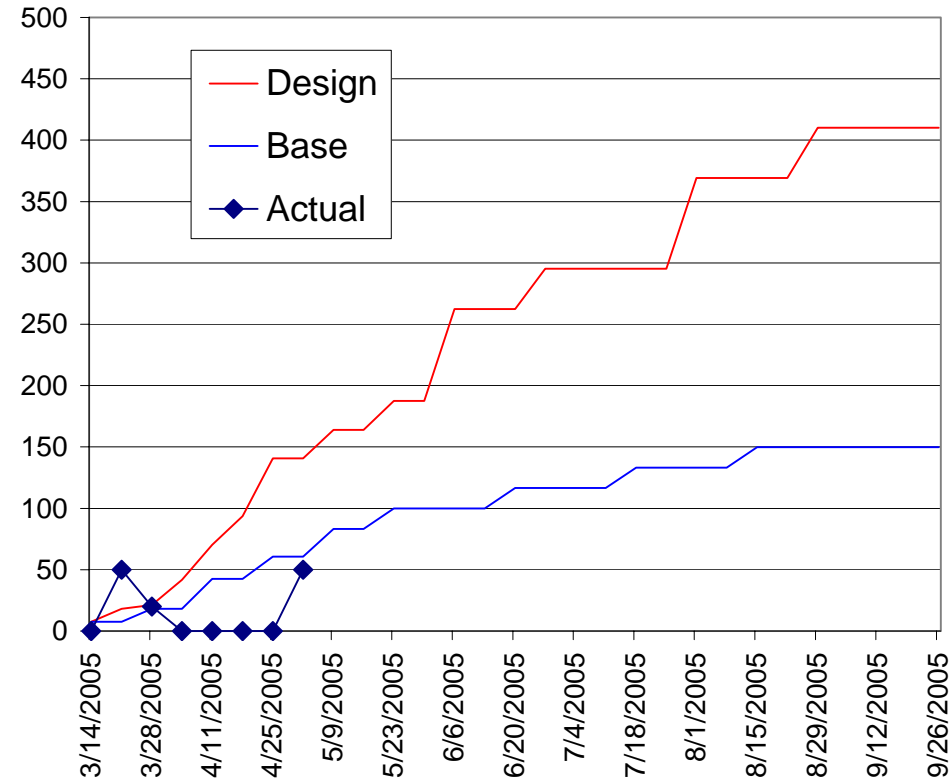
- NuMI is back in operation!!
 - Unable to reproduce leak when target was removed
 - Leak reappeared when target reinstalled, but Helium overpressure system seems to be working.
- Will still concentrate primarily on total proton delivery
- Note: Paul Derwent has been working on automated reporting mechanism for these numbers similar to Run II, but I haven't used it yet for this report (my fault).

NuMI Back!

NuMI PoT per Hour (E14)

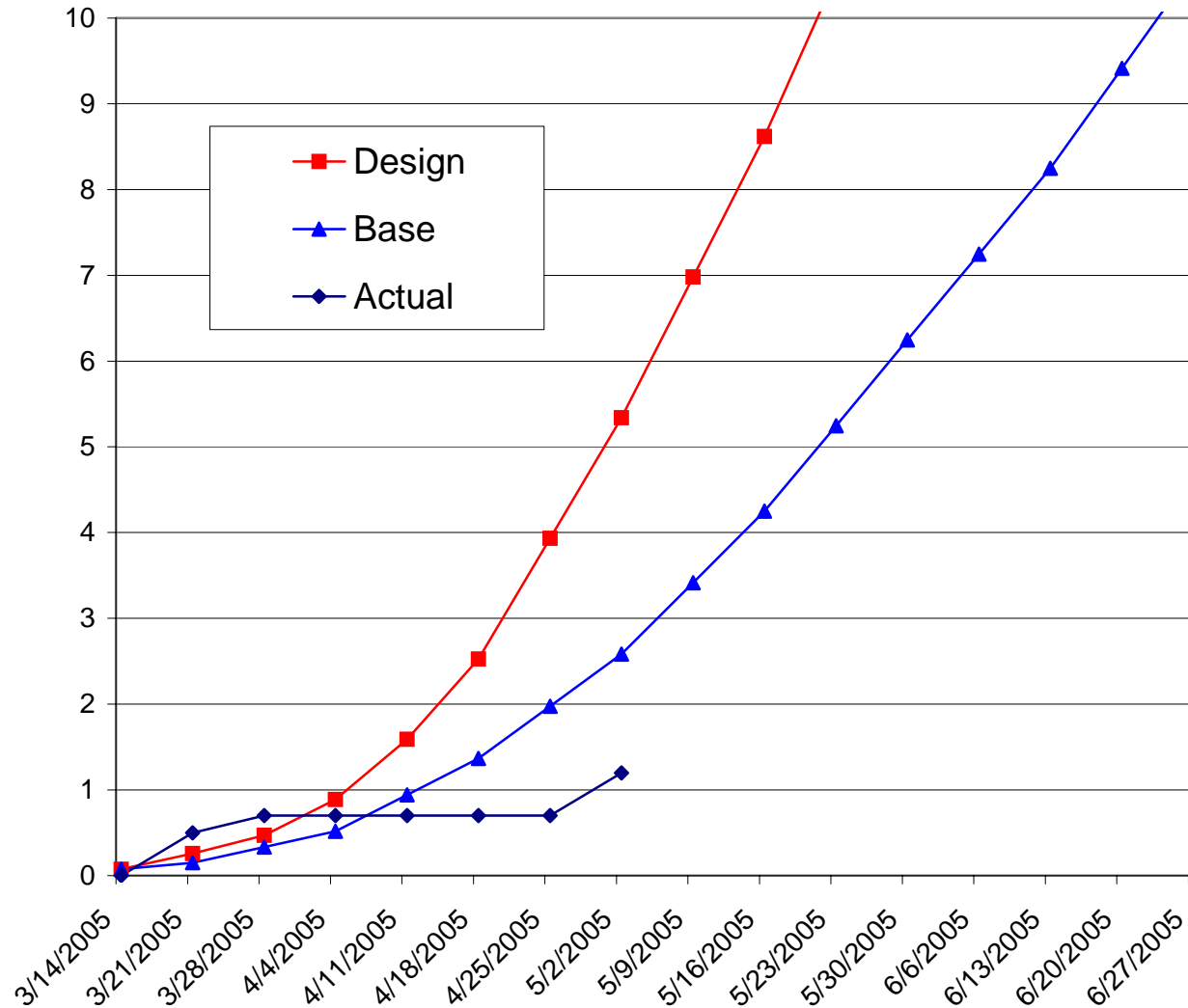


PoT per Week (E16)



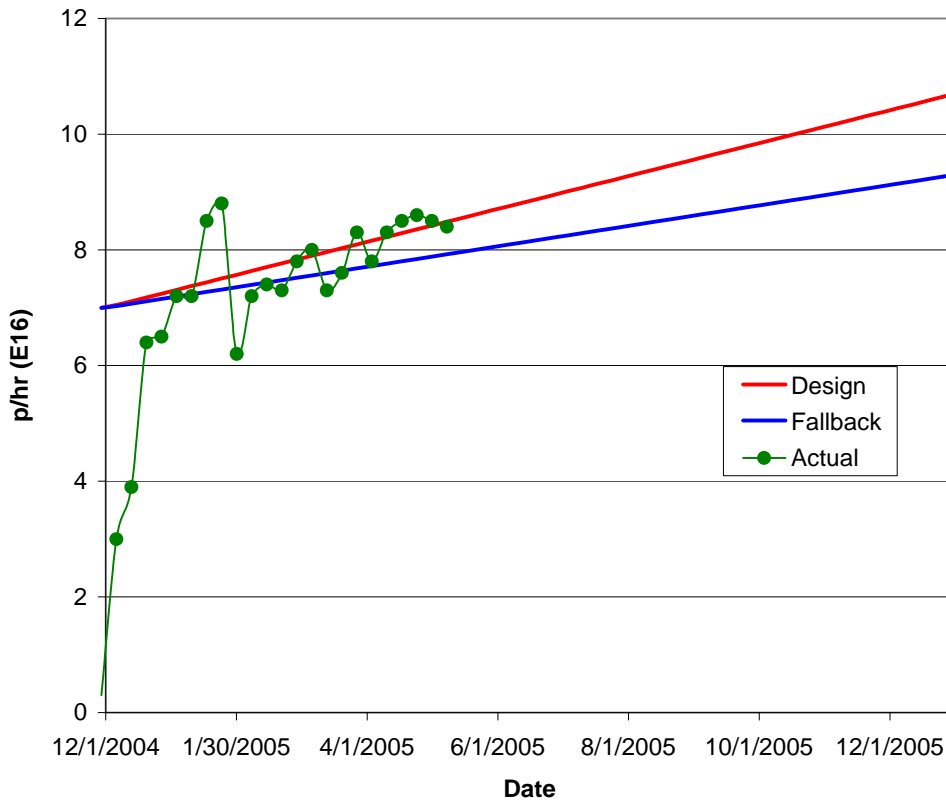
Trying to Catch up with Cumulative Totals

PoT Cumulative (E18)

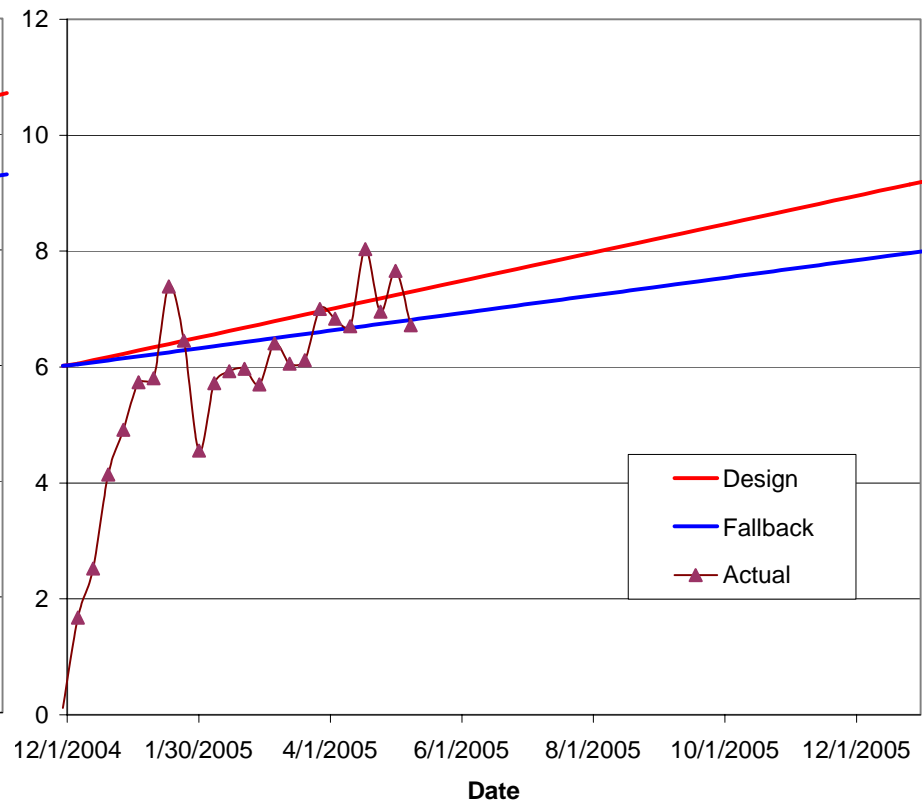


Hourly Proton Rate

Total Peak Hourly Rate (BNB+NuMI+pbar)

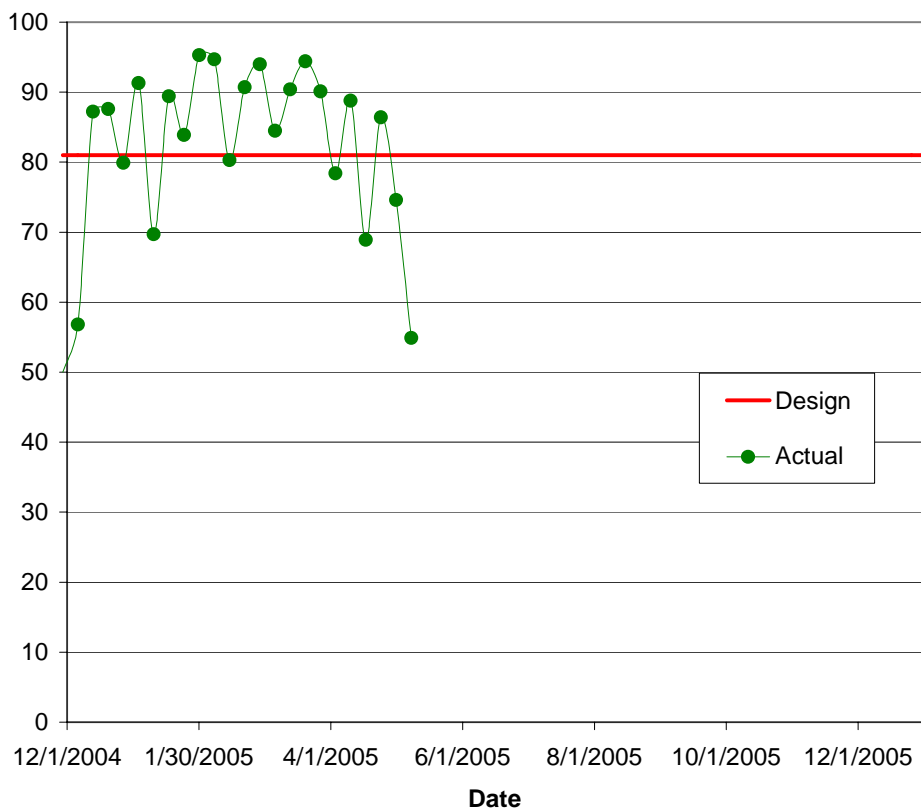


Average Hourly Rate (BNB+NuMI+pbar, while up)

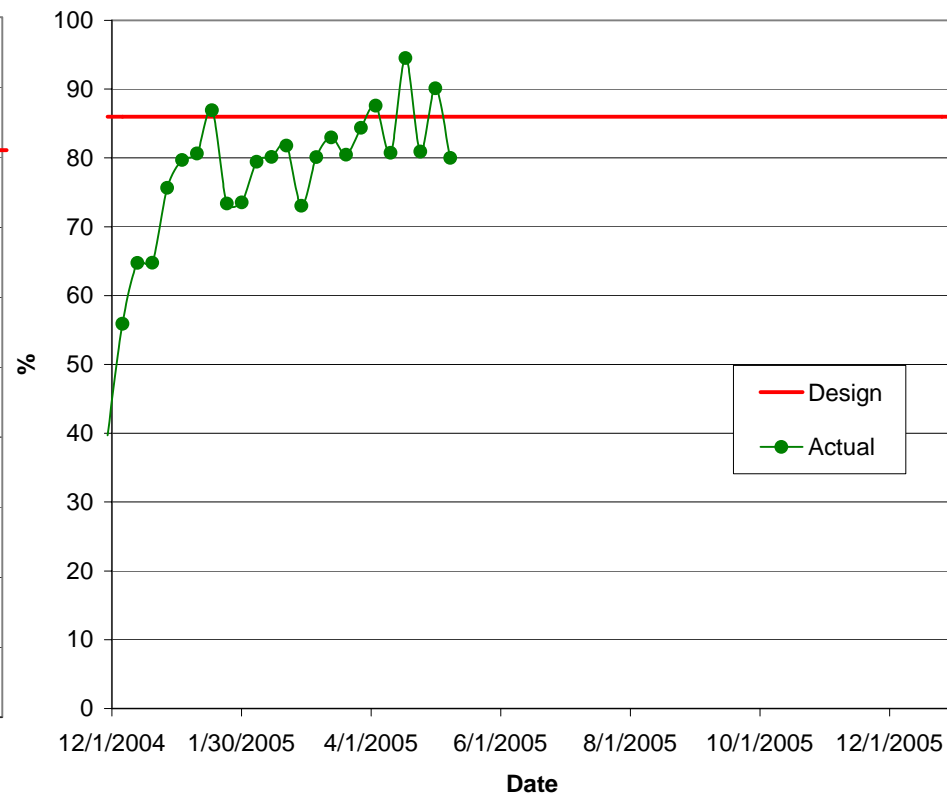


Efficiencies

Uptime

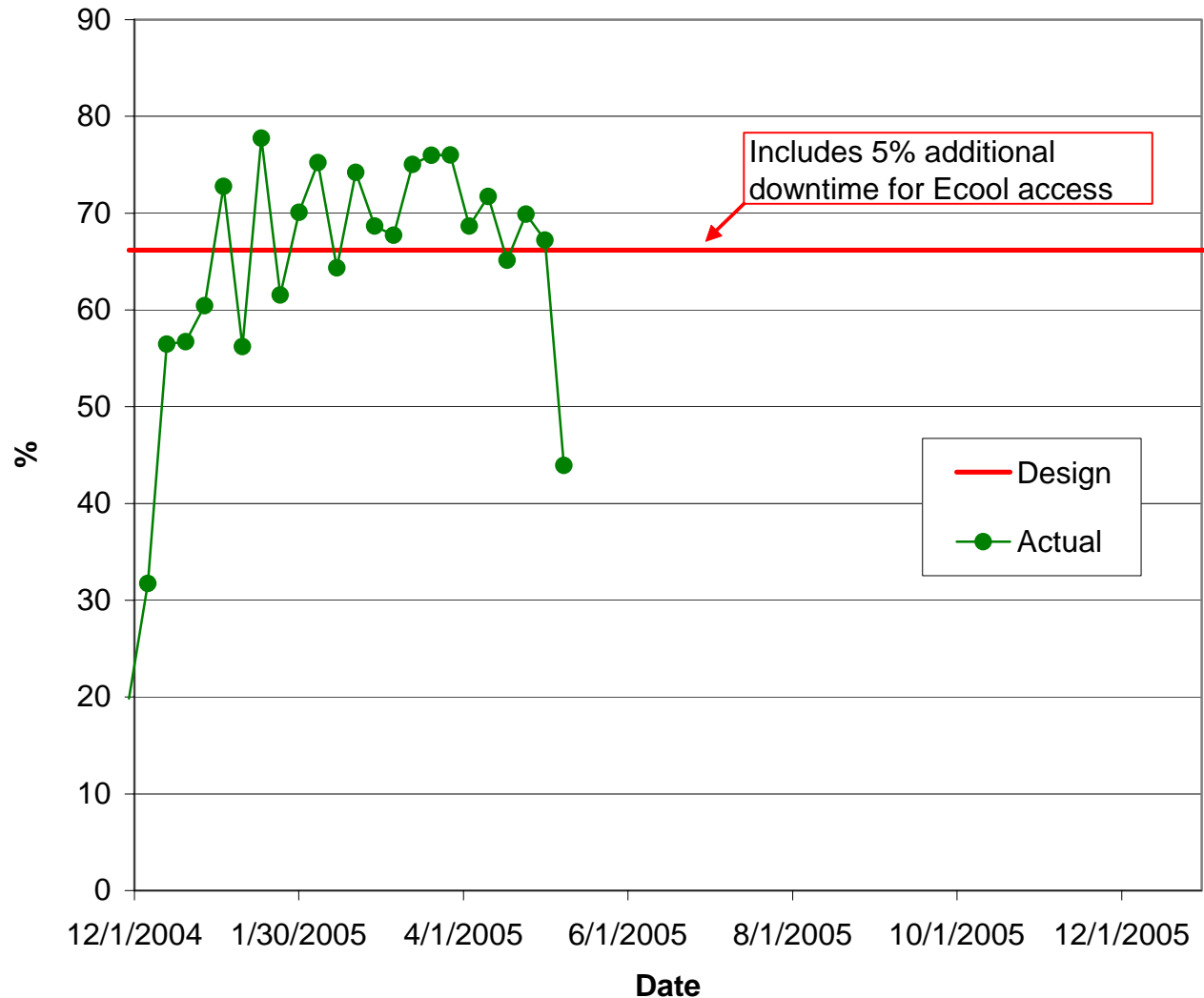


Average to Peak Efficiency (during uptime)



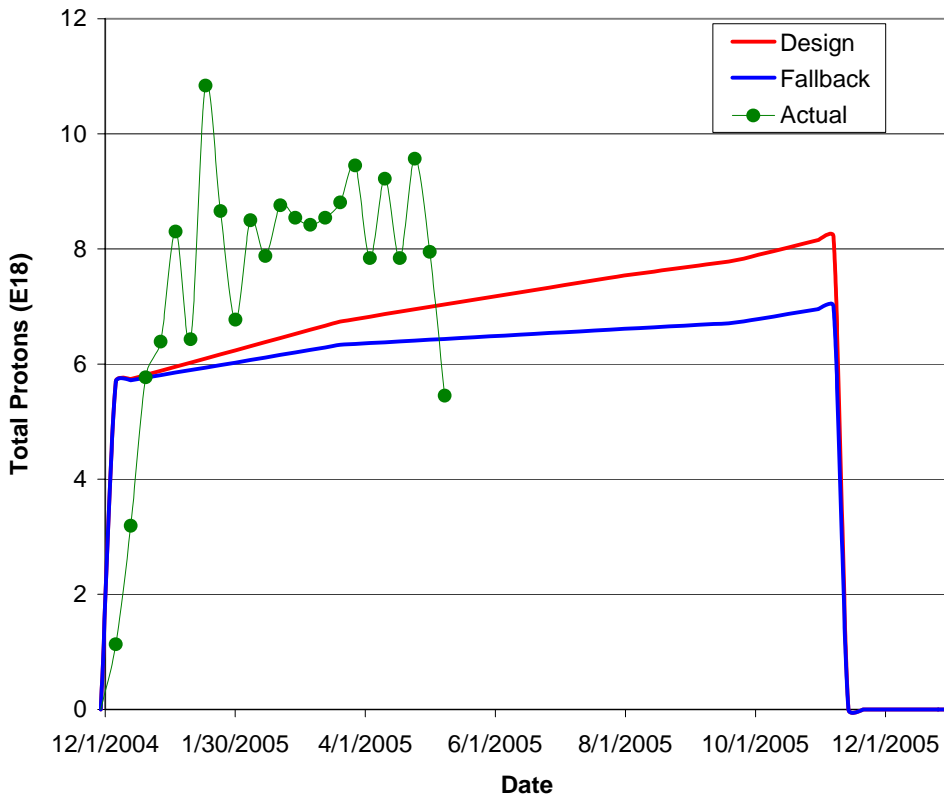
Overall "Peak to Week" Efficiency

Overall "Peak to Week" Efficiency

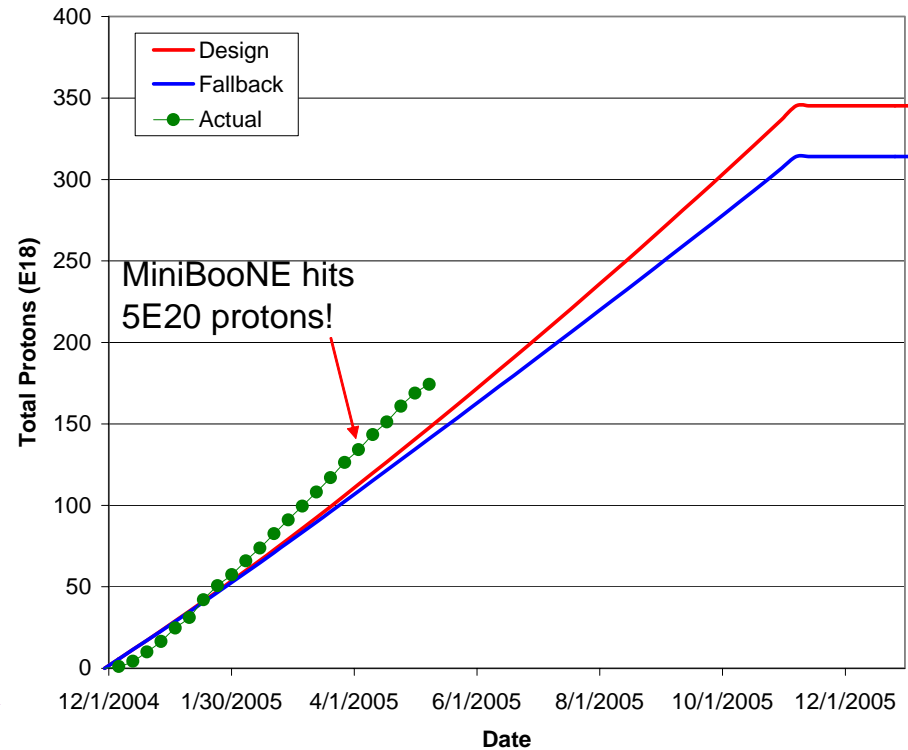


Integrated Delivery (BNB)

Weekly Proton Totals (BNB+NuMI)



Cumulative Proton Totals (BNB+NuMI)



Technical Progress

Scope Changes Since Last PMG

- Criteria to be in plan (one of following):
 - Critical path to plan goals.
 - Expensive (>\$200K)
 - Requires significant coordination across departments
- Added:
 - 400 MeV Line rearrangement
 - Part of ORBUMP replacement (discussed shortly)
- Delayed:
 - New booster notcher
 - Delayed to 2006 due to manpower considerations

Progress

- Baseline plan
 - Great progress made in assigning resources and managers
 - Aim for a baseline review next month (?)
- Technical Progress
 - Linac
 - 1.01.01 PA Vulnerability -
 - 7835 tubes have been ordered
 - Committee proceeding with post-Burle option plans
 - 1.01.02 Quad PS -
 - Prototype tests proceeding
 - Matching choke being fabricated in TD
 - Plan to refit tank 1 this year.
 - Booster
 - 1.02.02 Orbump -
 - Two magnets built, third being assembled
 - Modification made to current posts to allow for water cooling (after problem during test)
 - New injection scheme (discussed shortly) involves major girder and stripline redesign, but much simpler.
 - Power supply proceeding.
 - 1.02.02.04 400 MeV Line Reconfiguration (NEW SCOPE)
 - Required by new injection scheme
 - Working with Mechanical scope to work out details of work.

Progress

Booster

➤ 1.02.03 Correctors -

- Prototype and design work continuing
- Procurement for prototype starting.

➤ 1.02.11 Booster Dump Relocation

- Working with mechanical support, FESS, and rad. safety on details of project
 - Major rigging and stand fabrication
 - New penetrations from BTW to MI-8
 - Interlock issues
 - » Want to be able to run Booster with MI in access.

Progress

Main Injector

- 1.03.01 Large Aperture Quads -
 - Procurement 93% complete
 - First unit in fabrication (45% complete)
- 1.03.02 Collimation -
 - Logging survey meter requisitioned to help with systematic radiation measurements
 - Design of MI-8 collimator proceeding
 - Hope for review end of month.
- 1.03.03 NuMI MultiBatch Operations -
 - Barrier Bucket Procurement
 - Multibatch studies back on track now that NuMI target back in place.
- 1.03.04 RF Upgrade -
 - Discussed shortly

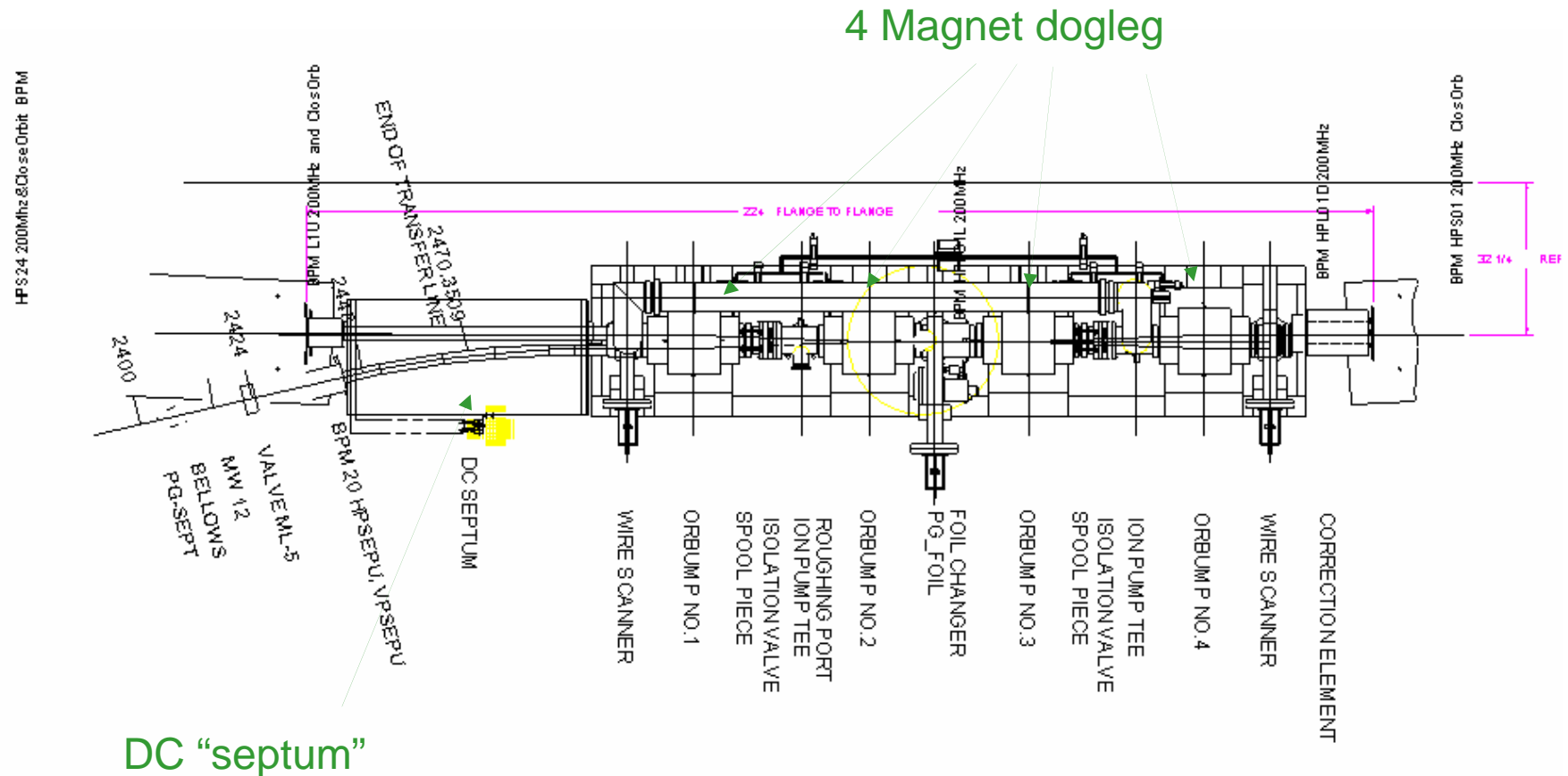
Studies

- 1.05 Proton Study Group-
 - Meeting furiously to review post-collider options
 - Draft report to Roger June 1

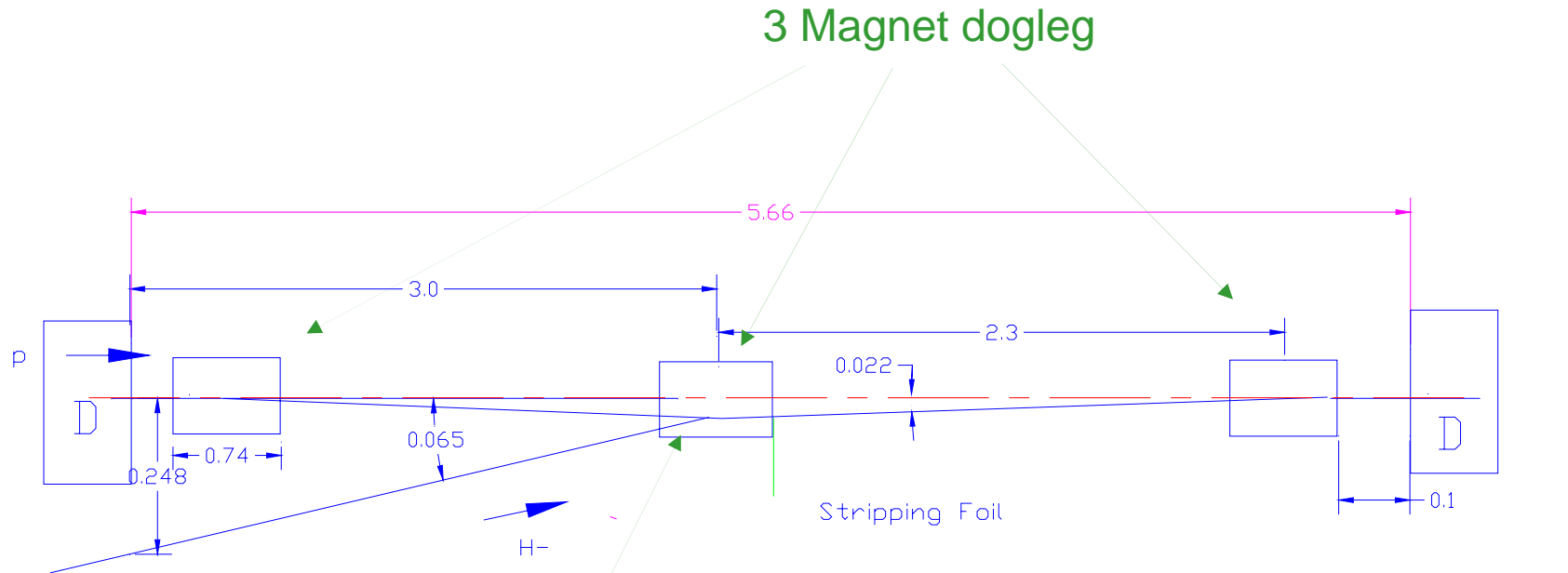
Main Injector RF (1.03.04)

- The Main Injector Upgrade path remains the single largest uncertainty in the Proton Plan
 - Still not certain whether any upgrade is needed for Stage I proton plan (almost half of budget)
- Consensus is now that increment 2 PA upgrade is beneficial, so large upgrade plan will be rewritten as a series of smaller AIP's, but...
- Nothing will be done until we can make more definite statements about the existing system.
 - Continue with prototype tests
 - Organize a workshop this summer with external input.

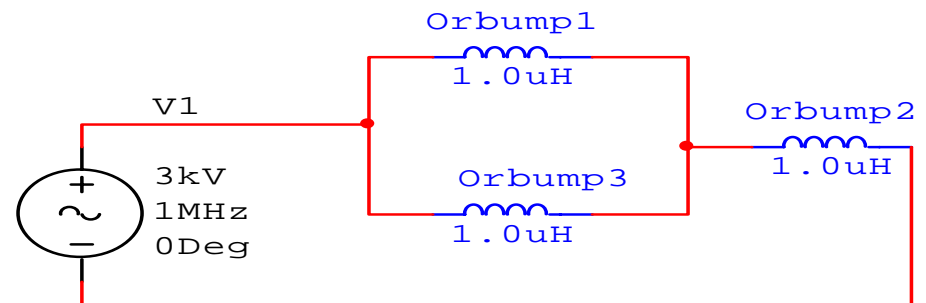
- Existing Scheme



New ORBUMP Scheme (M. Popovic)



Inject directly into
center magnet -> DC
septum goes away!!

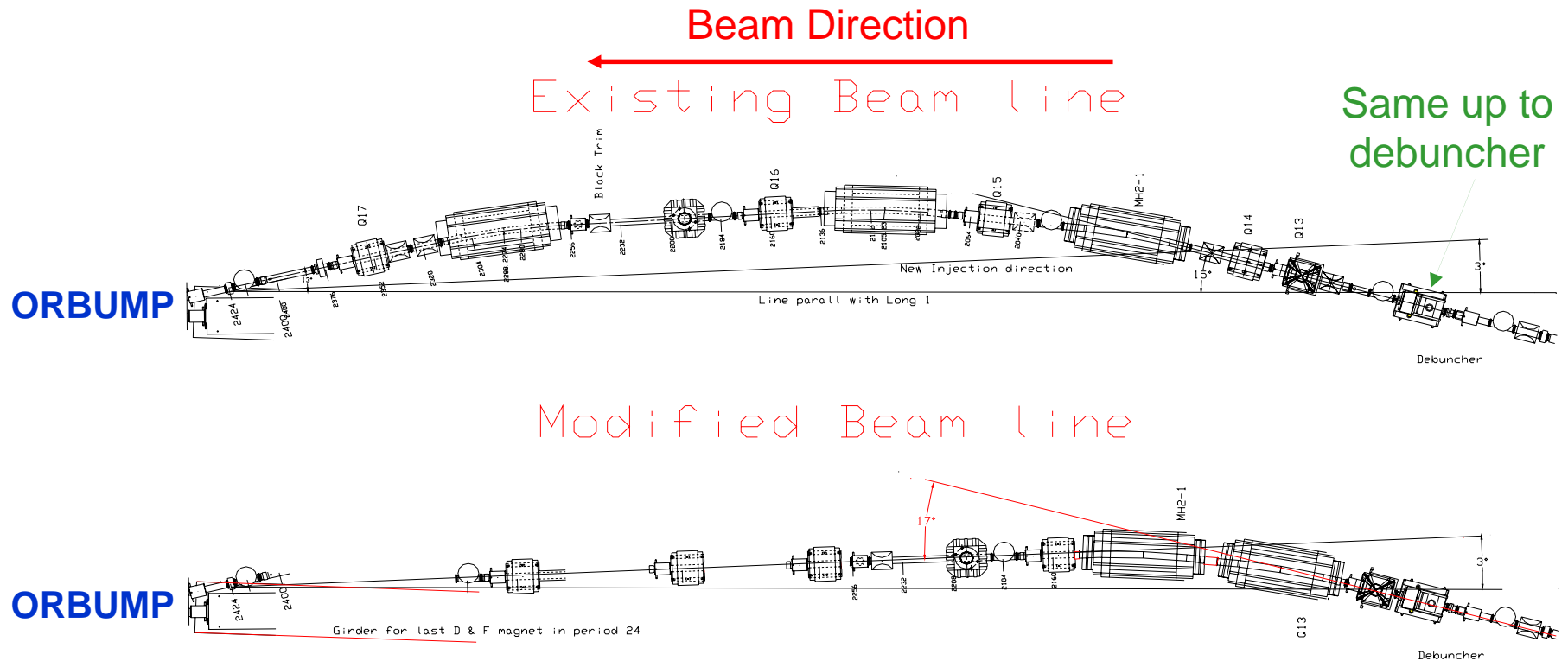


Stripline circuit

Advantages of New Scheme

- Reduced power from power supply:
 - Central magnet runs at ~current of all four original scheme
 - Outer magnets run at half this current
 - 50% reduction in current
 - 25% reduction in total voltage
- Reduced edge focusing effects
 - ~1/4 of existing design
- Eliminate DC septum
 - Aperture restriction (VERY HOT)
 - Hysteresis issues
- Simplify girder
 - Additional instrumentation??

Consequences for 400 MeV line



- No new beamline elements
 - DCSEP and one HBEND removed
 - Remaining elements rearranged
- Minimal stand fabrication

Consequences to Plan

- ORBUMP project not significantly effected
 - Only need three magnets -> now we'll have three spares
 - Girder and stripline were not yet designed anyway
 - New design simpler
 - Trivial mods to PFN in power supply
- 400 MeV line project new
 - Optical model looks OK
 - Working on beam sheet (F. Garcia)
 - Working with mechanical support for details of line rearrangement (Rob Reilly)
 - One new stand
 - Misc. vacuum parts
 - Had to remove many elements anyway to install new ORBUMP girder